

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PHASE VI PALM PLATE, ITEM 106 (1) LEFT (1) RIGHT ----- 0106-812149 (2)	2/2	106FM07Y Loss of palm plate attachment to restraint. Defective thread.	END ITEM: Palm plate out of position. GFE INTERFACE: Hampered hand mobility. Difficulty interfacing with tools. Crewman discomfort due to pressure points. MISSION: Terminate EVA. CREW/VEHICLE: None. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - A fiberglass one piece palm plate is provided in the palm area of the restraint to enhance hand dexterity. The palm plate is sewn into a Dacron pocket to eliminate bladder abrasion and control the location of the palm plate. The edges of the fiberglass plate are contoured to provide a friendly interfacing surface. Size E thread is used to secure the pocket to the restraint. B. Test - Acceptance: Component - See Inspection. PDA Test - The following test is conducted at the glove assembly level in accordance with ILC Document 0111-710112: 1. Proof pressure test at 8.0 (+ 0.2 - 0.0) psig for five minutes to verify structural damage. Certification Test - The glove restraint assembly was successfully tested (manned) during certification testing to duplicate operational usage (Ref. Certification Test Report for the Phase VI Glove, ILC Doc. 0111-712701). The following usage, reflecting requirements of significance to the glove restraint assembly, was documented during certification testing. The S/AD applies 229 hours in certification while the actual indicates 198 hours toward the Phase VI glove restraint in the Hamilton Sundstrand Limited Life Items list (EMU1-19-001). Requirements S/AD Actual ----- Glove Joint Cycles Flex/Ext (fingers) 45142 39169 Wrist Joint Cycles Add/Abd 17104 14830 Flex/Ext 12646 10830 Rotations 20112 17393 Pressurized Hours 229 198 Pressurized Cycle @ 4.3 psig 97 99 5.3 psig 37 63 6.6 psig 16 18 Don/Doff Cycles 49 49 The glove assembly was successfully subjected to an ultimate pressure of 11.5 psig during Certification Testing (Ref. ILC doc 0111-712701). This is 1.5 times the maximum BTA operating pressure based on 8.8 psig. C. Inspection - Components and material manufactured to ILC requirements at an approved supplier are documented from procurement through shipping by the supplier. ILC incorporation receiving inspection verifies that the materials received are as identified in the procurement documents, that no damage has occurred during shipment and that supplier certifications have been received which provide traceability information.

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		106FM07Y		<p>The following MIP's are performed for visual inspection of sewn seams during glove restraint manufacturing process to assure that this particular failure cause is precluded from the fabricated item.</p> <ol style="list-style-type: none">1. Visual inspection of seams and spandex covering for defective threads and material. <p>During PDA, the following inspection points are performed at the glove assembly level in accordance with ILC Document 0111-710112:</p> <ol style="list-style-type: none">1. Visual inspection for fabric or material degradation.2. Visual inspection for damage following proof pressure test and restraint loading. <p>D. Failure History - None.</p> <p>E. Ground Turnaround - Inspected per FEMU-R-001, Pre-Flight Complete Visual Inspection. The glove restraint and bladder assembly is subjected to a visual inspection (interior and exterior surfaces) to the extent possible for structural integrity, material degradation or damage. In addition, a crewmember fit check (pressurized) required prior to flight to verify fit.</p> <p>F. Operational Use - Crew Response - EVA: Continue EVA. If excessive crewmember discomfort due to pressure point terminate EVA. Pre/Post EVA: If during airlock operations, repress airlock. Consider use of backup gloves. Special Training - Standard training covers this failure mode.</p> <p>Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-128 defines go/no go criteria related to EMU pressure integrity. Generic EVA Checklist, JSC-48023, procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.</p>

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-106 GLOVE ASSEMBLY
CRITICAL ITEM LIST (CIL)

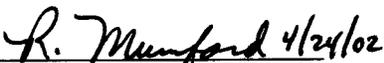
EMU CONTRACT NO. NAS 9-97150

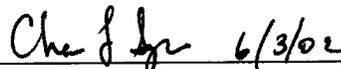
Prepared by: 
HS - Project Engineering

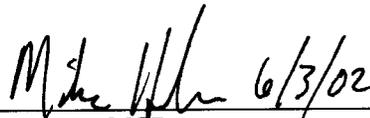
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NASA - SSA/SSM

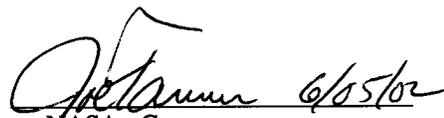

HS - Reliability

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NASA - EMU/SSM

 4/24/02
HS - Engineering Manager

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NASA - S & MA

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NASA - MOD

 6/5/02
NASA - Crew

 6/3/02
NASA - Program Manager